IN THE CLAIMS:

Please cancel Claim 19 without prejudice to or disclaimer of the subject matter recited therein.

Please amend Claims 1, 13, 16, 20, 39, 50, 53, 56, 57, 76, 77, 78, 81 and 82 as follows.

1. (Currently Amended) A method of recording images of a subject object from different positions and orientations and processing the recorded image data to generate a three-dimensional computer model of the subject object, said method comprising the steps of:

supporting the subject object above a calibration object having a predetermined pattern of features using an object support;

recording at different positions and orientations a plurality of images of the subject object supported above the calibration object;

processing the recorded image data to calculate the position and orientation at which each of at least some of the images were recorded; and

generating, using the calculated positions and orientations, data defining a three-dimensional computer model of at least the subject object by defining a volume of voxels in a three-dimensional space in dependence upon the known height of the object support such that the object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.

2. (Previously Presented) A method according to claim 1, wherein the images of the subject object, supported above the calibration object, are recorded with a background of a substantially uniform color behind the subject object such that, in each recorded image, the outline of the subject object is surrounded by the background except where the outline touches the support.

3. (Original) A method according to claim 2, wherein the background is provided by a background screen.

4. (Previously Presented) A method according to claim 2,

wherein at least the part of the object support adjacent the subject object is substantially the same color as the background, and

wherein said generating step of generating data defining the three-dimensional computer model includes generating data defining a three-dimensional computer model of the subject object and a separated three-dimensional computer model of the object support.

5. (Previously Presented) A method according to claim 1,

wherein at least the part of the object support adjacent the subject object is substantially transparent, and

wherein said generating step of generating data defining the three-dimensional computer model includes generating data defining a three-dimensional computer model of the subject object and a separated three-dimensional computer model of the object support.

6. (Previously Presented) A method according to claim 1,

wherein the subject object is supported by at least one surface of the object support standing on the calibration object, and

wherein each surface of the object support supporting the subject object does not protrude substantially from beneath the subject object.

7. (Previously Presented) A method according to claim 1,

wherein the object support has calibration features thereon, and

wherein said processing step of calculating the position and orientation at which each of at least some of the images were recorded includes detecting calibration features on the object support in image data and using the positions of the detected features to calculate the positions and orientations at which the images were recorded.

8. (Original) A method according to claim 7, wherein data defining the relative positions of the calibration features on the object support is prestored and used to calculate the positions and orientations at which the images were recorded.

9. (Original) A method according to claim 7,

wherein the object support is arranged relative to the calibration object in a predetermined configuration, and

wherein data defining the positions of the calibration features on the object support relative to the positions of the features on the calibration object is prestored and used to calculate the positions and orientations at which the images were recorded.

10. (Original) A method according to claim 1,

wherein the subject object is supported above a reflective surface, and

wherein processing is carried out to generate texture data for the three-dimensional computer model of the subject object in dependence upon image data that corresponds to reflections in the reflective surface.

11. (Original) A method according to claim 1, wherein the calibration object is three-dimensional.

12. (Original) A method according to claim 1, wherein the object support and the calibration object are formed as one, with the subject object being supported thereby above the predetermined pattern of features thereon.

13. (Currently Amended) A method of processing image data defining a plurality of images recorded at different positions and orientations of a subject object supported by an object support above a calibration object having a predetermined pattern of features, said method comprising the steps of:

calculating the positions and orientations at which at least some of the images were recorded by processing the image ~~data,~~ data; and

generating, using the calculated positions and orientations, data defining a three-dimensional computer model of the subject object but not the object support by defining a volume of voxels in a three-dimensional space in dependence upon the known height of the

object support such that the object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.

14. (Previously Presented) A method according to claim 13, wherein said calculating step of calculating the positions and orientations at which at least some of the images were recorded includes detecting matching features in the image data defining respective images corresponding to features on the object support.

15. (Previously Presented) A method according to claim 13, wherein said generating step of generating data defining the three-dimensional computer model includes:

processing images to segment image data relating to at least the subject object from background image data; and

processing the segmented image data and the calculated positions and orientations to generate the data defining the three-dimensional computer model.

16. (Currently Amended) A method of processing image data to generate a three-dimensional computer model, said method comprising the steps of:

receiving image data defining at least in part a plurality of images of a subject object supported by an object support recorded at different relative positions and orientations;

receiving data defining the positions and orientations at which the images were recorded; and

generating data, by processing the received data, defining a three-dimensional computer model of the subject object but not the object support by performing processing using

at least one known parameter of the object support to generate data defining the three-dimensional computer model of the subject object without generating data defining a three-dimensional computer model of the object support, by defining a volume of voxels in a three-dimensional space in dependence upon the known height of the object support such that the object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.

17. (Previously Presented) A method according to claim 13, wherein said generating step of generating data defining the three-dimensional computer model includes performing processing using at least one known parameter of the object support to generate data defining the three-dimensional computer model of the subject object without generating data defining a three-dimensional computer model of the object support.

18. (Previously Presented) A method according to claim 16 or claim 17, wherein the known parameter of the object support is the height of the object support.

Claim 19. (Cancelled).

20. (Currently Amended) A method of processing image data to generate a three-dimensional computer model, said method comprising the steps of:

receiving image data defining at least in part a plurality of images of a subject object supported by an object support recorded at different relative positions and orientations;

receiving data defining the positions and orientations at which the images were recorded; and

processing the received data to generate data defining a three-dimensional computer model of the subject object but not the object support by performing processing to generate at least one three-dimensional computer model of the subject object and object support and performing processing to remove the three-dimensional computer model of the object support by defining a volume of voxels in a three-dimensional space in dependence upon the known height of the object support such that the object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.

21. (Previously Presented) A method according to claim 20 or claim 80, wherein the processing to remove the three-dimensional computer model of the object support is carried out in dependence upon signals input by a user defining the three-dimensional computer model to be removed.

22. (Previously Presented) A method according to claim 21, wherein the processing to remove the three-dimensional computer model of the object support includes:

(a) generating image data for display to a user defining an image of the three-dimensional computer model of the subject object and object support together with a plane moveable by the user;

(b) receiving signals, input by the user, defining a position of the plane;

(c) repeating steps (a) and (b); and

(d) removing the three-dimensional computer model which lies on a predetermined side of the plane.

23. (Original) A method according to claim 22, wherein:

the subject object is supported on the top-most surface of an object support standing on the calibration object;

the plane is generated so as to have an orientation in a substantially horizontal plane; and

processing is performed to allow the user to move the position of the plane but not to change the orientation of the plane.

24. (Original) A method according to claim 22, wherein the plane is generated with the same shape and cross-sectional area as the object support.

25. (Previously Presented) A method according to claim 22, wherein the removal of the three-dimensional computer model which lies on the predetermined side of the plane includes:

defining a volume of voxels in a three-dimensional space such that a boundary of the volume is at a position corresponding to the position of the plane; and

removing voxels from the volume in dependence upon the image data.

26. (Previously Presented) A method according to claim 21,

wherein processing is carried out to generate a three-dimensional computer model of the subject object and a separate three-dimensional computer model of the object support, and

wherein the removal of the three-dimensional computer model of the object support includes generating image data for display to the user defining at least one image of the three-dimensional computer models, receiving signals, input by the user, defining one of the three-dimensional computer models and removing one of the three-dimensional computer models in dependence upon the signals input by the user.

27. (Previously Presented) A method according to claim 20 or claim 80, wherein the processing to remove the three-dimensional computer model of the object support includes processing to identify the three-dimensional computer model to remove without signals input by a user.

28. (Original) A method according to claim 27,

wherein processing is carried out to generate a three-dimensional computer model of the subject object and a separate three-dimensional computer model of the object support, and

wherein processing is carried out to remove the three-dimensional computer model having a position closest to the position corresponding to the position of the calibration object.

29. (Original) A method according to claim 27, wherein processing is carried out to test at least one property of the three-dimensional computer model at different positions and to remove a part of the three-dimensional computer model in dependence upon a position at which the tested property changes.

30. (Previously Presented) A method according to claim 29, wherein at least one of the cross-sectional area and color of the three-dimensional computer model is tested.

31. (Previously Presented) A method according to claim 27, wherein data defining a reference three-dimensional computer model of the object support is prestored, the reference three-dimensional computer model is compared against the three-dimensional computer model of the subject object and the object support to identify a part thereof which corresponds to the object support, and the identified part is removed.

32. (Previously Presented) A method according to claim 13, claim 16 or claim 20, wherein the generation of the data defining the three-dimensional computer model includes generating texture data using the image data.

33. (Original) A method according to claim 32, wherein the generation of the texture data includes processing the image data to identify data corresponding to a reflection of the subject object in a reflective surface, and using the identified data to generate texture data for a surface of the three-dimensional computer model.

34. (Previously Presented) A method according to claim 16 or claim 20, wherein the received image data comprises image data relating to the subject object and object support previously segmented from other image data in the recorded images.

35. (Previously Presented) A method according to claim 13, claim 16 or claim 20, further comprising generating a signal conveying data defining the three-dimensional computer model of the subject object.

36. (Original) A method according to claim 35, further comprising recording the signal either directly or indirectly.

Claims 37 and 38. (Cancelled).

39. (Currently Amended) A system for recording images of a subject object from different positions and orientations and for processing the recorded image data to generate a three-dimensional computer model of the subject object, said system comprising:

a calibration object having a predetermined pattern of features;

an object support for supporting the subject object higher than the calibration object;

an imager operable to record, at different positions and orientations, a plurality of images of the subject object supported higher than the calibration object; and

an image data processing apparatus, comprising:

a position and orientation calculator operable to process the recorded image data to calculate the position and orientation at which each of at least some of the images were recorded; and

a computer model generator operable to perform processing using the calculated positions and orientations to generate data defining a three-dimensional computer model of at least the subject object, by defining a volume of voxels in a three-dimensional space in dependence upon the known height of said object support such that said object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.

40. (Previously Presented) A system according to claim 39, further comprising a screen having a substantially uniform color for placing behind the subject object so that images of the subject object supported higher than the calibration object can be recorded with the screen behind the subject object such that, in each recorded image, the outline of the subject object is surrounded by the background except where the outline touches the support.

41. (Previously Presented) A system according to claim 40, wherein:

at least the part of said object support adjacent the subject object, when the subject object is placed thereon, is substantially the same color as the screen; and

said computer model generator is operable to generate data defining a three-dimensional computer model of the subject object and a separated three-dimensional computer model of the object support.

42. (Previously Presented) A system according to claim 39, wherein:

at least the part of said object support adjacent the subject object, when the subject object is placed thereon, is substantially transparent; and

said computer model generator is operable to generate data defining a three-dimensional computer model of the subject object and a separated three-dimensional computer model of the object support.

43. (Previously Presented) A system according to claim 39, wherein said object support is arranged such that, when the subject object sits thereon, no surface supporting the subject object protrudes substantially from beneath the subject object.

44. (Previously Presented) A system according to claim 39, wherein:

said object support has calibration features thereon; and

said position and orientation calculator is operable to detect calibration features on said object support in image data and use the positions of the detected features to calculate the positions and orientations at which the images were recorded.

45. (Previously Presented) A system according to claim 44, wherein:

said image data processing apparatus includes a data store for prestoring data defining the relative positions of the calibration features on the object support, and

said position and orientation calculator is operable to use prestored data from the data store to calculate the positions and orientations at which the images were recorded.

46. (Previously Presented) A system according to claim 44, wherein:

said object support is arranged to connect to said calibration object in a predetermined configuration;

said image data processing apparatus includes a data store for prestoring data defining the positions of the calibration features on said object support relative to the positions of the features on the calibration object when said object support is connected to said calibration object; and

said position and orientation calculator is operable to use prestored data from the data store to calculate the positions and orientations at which the images were recorded.

47. (Previously Presented) A system according to claim 39, wherein:

said calibration object has a reflective surface; and

said image data processing apparatus includes a texture generator operable to generate texture data for the three-dimensional computer model of the subject object in dependence upon image data that corresponds to reflections in the reflective surface.

48. (Previously Presented) A system according to claim 39, wherein said calibration object is three-dimensional.

49. (Previously Presented) A system according to claim 39, wherein said object support and said calibration object are formed as one with a surface for supporting the subject object such that, when the subject object sits thereon, the subject object is supported higher than, and separated from, the predetermined pattern of features.

50. (Currently Amended) An apparatus operable to process image data defining a plurality of images recorded at different positions and orientations of a subject object supported by an object support higher than a calibration object having a predetermined pattern of features, said apparatus comprising:

a position and orientation calculator operable to process the image data to calculate the positions and orientations at which at least some of the images were recorded; and

a computer model generator operable to perform processing using the calculated positions and orientations to generate data defining a three-dimensional computer model of the subject object but not the object support, by defining a volume of voxels in a three-dimensional space in dependence upon the known height of the object support such that the object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.

51. (Previously Presented) An apparatus according to claim 50, wherein said position and orientation calculator includes a feature matcher operable to detect matching features in the image data defining respective images corresponding to features on the object support.

52. (Previously Presented) An apparatus according to claim 50, wherein:

said computer model generator includes an image data segmenter operable to process images to segment image data relating to at least the subject object from background image data; and

said computer model generator is operable to process the segmented image data and the calculated positions and orientations to generate the data defining the three-dimensional computer model.

53. (Currently Amended) An apparatus operable to process image data to generate a three-dimensional computer model, said apparatus comprising:

an image data receiver for receiving image data defining at least in part a plurality of images of a subject object supported by an object support recorded at different relative positions and orientations;

a position and orientation data receiver for receiving data defining the positions and orientations at which the images were recorded; and

a computer model generator operable to process the received data to generate data defining a three-dimensional computer model of the subject object but not the object support using at least one known parameter of the object support to generate data defining the three-dimensional computer model of the subject object without generating data defining a three-dimensional computer model of the object support, by defining a volume of voxels in a three-dimensional space in dependence upon the known height of the object support such that the object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.

54. (Previously Presented) An apparatus according to claim 50, wherein said computer model generator is operable to perform processing using at least one known parameter of the object support to generate data defining the three-dimensional computer model

of the subject object without generating data defining a three-dimensional computer model of the object support.

55. (Previously Presented) An apparatus according to claim 53 or claim 54, wherein the known parameter of the object support is the height of the object support.

56. (Currently Amended) An apparatus according to claim 55, wherein said computer model generator includes:

a voxel generator operable to define ~~a~~ the volume of voxels in ~~a~~ the three-dimensional space with the base plane of the volume set to be at a height higher than the calibration object corresponding to the known height of the object support; and

a voxel remover operable to remove the voxels from the volume in dependence upon the image data.

57. (Currently Amended) An apparatus operable to process image data to generate a three-dimensional computer model, said apparatus comprising:

an image data receiver for receiving image data defining at least in part a plurality of images of a subject object supported by an object support recorded at different relative positions and orientations;

a position and orientation data receiver for receiving data defining the positions and orientations at which the images were recorded; and

a computer model generator operable to process the received data to generate data defining a three-dimensional computer model of the subject object but not the object support,

wherein said computer model generator is operable to perform processing to generate at least one three-dimensional computer model of the subject object and object support, ~~and~~

wherein said computer model generator includes a computer model remover operable to perform processing to remove the three-dimensional computer model of the object support, and

wherein said computer model generator defines a volume of voxels in a three-dimensional space in dependence upon the known height of the object support such that the object support, but not the subject object, is excluded from the volume, and removes voxels from the volume in dependence upon the image data.

58. (Previously Presented) An apparatus according to claim 57 or claim 81, wherein said computer model remover is operable to remove the three-dimensional computer model in dependence upon signals input by a user defining the three-dimensional computer model to be removed.

59. (Previously Presented) An apparatus according to claim 58, wherein said computer model remover includes:

an image data generator operable to generate image data for display to a user defining an image of the three-dimensional computer model of the subject object and object support, together with a plane moveable by the user; and

a user input signal receiver for receiving signals, input by the user, defining a position of the plane, and

wherein said computer model remover is operable to remove the three-dimensional computer model which lies on a predetermined side of the plane.

60. (Previously Presented) An apparatus according to claim 59, wherein the subject object is supported on the top-most surface of an object support standing on the calibration object, and said computer model remover is arranged to operate so that:

the plane is generated so as to have an orientation in a substantially horizontal plane; and

processing is performed to allow the user to move the position of the plane but not to change the orientation of the plane.

61. (Previously Presented) An apparatus according to claim 59, wherein said computer model remover is arranged to operate so that the plane is generated with the same shape and cross-sectional area as the object support.

62. (Previously Presented) An apparatus according to claim 59, wherein said computer model remover comprises:

a voxel definer operable to define a volume of voxels in a three-dimensional space such that a boundary of the volume is at a position corresponding to the position of the plane; and

a voxel remover operable to remove voxels from the volume in dependence upon the image data.

63. (Previously Presented) An apparatus according to claim 58, wherein:

said apparatus is arranged to carry out processing to generate a three-dimensional computer model of the subject object and a separate three-dimensional computer model of the object support;

said computer model remover includes:

an image data generator operable to generate image data for display to the user defining at least one image of the three-dimensional computer models; and

a user input signal receiver for receiving signals input by the user defining one of the three-dimensional computer models; and

said computer model remover is operable to remove one of the three-dimensional computer models in dependence upon the signals input by the user.

64. (Previously Presented) An apparatus according to claim 57 or claim 81, wherein said computer model remover is arranged to operate to identify the three-dimensional computer model to remove without signals input by a user.

65. (Previously Presented) An apparatus according to claim 64, wherein said apparatus is arranged to carry out processing to generate a three-dimensional computer model of the subject object and a separate three-dimensional computer model of the object support, and said computer model remover is arranged to carry out processing to remove the three-dimensional computer model having a position closest to the position corresponding to the position of the calibration object.

66. (Previously Presented) An apparatus according to claim 64, wherein said computer model remover is arranged to carry out processing to test at least one property of the three-dimensional computer model at different positions and to remove a part of the three-dimensional computer model in dependence upon a position at which the tested property changes.

67. (Previously Presented) An apparatus according to claim 66, wherein said computer model remover is arranged to test at least one of the cross-sectional area and color of the three-dimensional computer model to determine the part of the three-dimensional computer model to remove.

68. (Previously Presented) An apparatus according to claim 64, wherein said computer model remover comprises:

a data store for prestoring data defining a reference three-dimensional computer model of the object support;

a model comparer operable to compare the reference model against the three-dimensional computer model of the subject object and the object support to identify the part thereof which corresponds to the object support; and

a part remover operable to remove the identified part.

69. (Previously Presented) An apparatus according to claim 50, claim 53 or claim 57, wherein said computer model generator includes a texture data generator operable to generate texture data using the image data.

70. (Previously Presented) An apparatus according to claim 69, wherein:

said texture data generator includes a reflection data identifier operable to process the image data to identify data corresponding to a reflection of the subject object in a reflective surface, and

said texture data generator is operable to use the identified data to generate texture data for a surface of the three-dimensional computer model.

71. (Previously Presented) An apparatus according to claim 53 or claim 57, wherein the received image data comprises image data relating to the subject object and object support previously segmented from other image data in the recorded images.

Claims 72 and 73. (Cancelled).

74. (Previously Presented) A storage device storing instructions for causing a programmable processing apparatus to become operable to perform a method as set out in claim 13, claim 16 or claim 20.

75. (Previously Presented) A signal conveying instructions for causing a programmable processing apparatus to become operable to perform a method as set out in claim 13, claim 16 or claim 20.

76. (Currently Amended) A system for recording images of a subject object from different positions and orientations and for processing the recorded image data to generate a three-dimensional computer model of the subject object, said system comprising:

a calibration object having a predetermined pattern of features;

an object support for supporting the subject object higher than said calibration object;

an imager for recording, at different positions and orientations, a plurality of images of the subject object supported higher than said calibration object; and

an image data processing apparatus, comprising:

means for processing the recorded image data to calculate the position and orientation at which each of at least some of the images were recorded; and

means for performing processing using the calculated positions and orientations to generate data defining a three-dimensional computer model of at least the subject object, by defining a volume of voxels in a three-dimensional space in dependence upon the known height of said object support such that said object support, but not the subject object, is

excluded from the volume, and removing voxels from the volume in dependence upon the image data.

77. (Currently Amended) An apparatus for processing image data defining a plurality of images recorded at different positions and orientations of a subject object supported by an object support higher than a calibration object having a predetermined pattern of features, said apparatus comprising:

means for processing the image data to calculate the positions and orientations at which at least some of the images were recorded, and

means for performing processing using the calculated positions and orientations to generate data defining a three-dimensional computer model of the subject object but not the object support, by defining a volume of voxels in a three-dimensional space in dependence upon the known height of the object support such that the object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.

78. (Currently Amended) An apparatus for processing image data to generate a three-dimensional computer model, said apparatus comprising:

means for receiving image data defining at least in part a plurality of images of a subject object supported by an object support recorded at different relative positions and orientations;

means for receiving data defining the positions and orientations at which the images were recorded; and

means for processing the received data to generate data defining a three-dimensional computer model of the subject object but not the object support using at least one known parameter of the object support to generate data defining the three-dimensional computer model of the subject object without generating data defining a three-dimensional computer model of the object support, by defining a volume of voxels in a three-dimensional space in dependence upon the known height of the object support such that the object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.

Claim 79. (Cancelled).

80. (Previously Presented) A method according to claim 13, wherein said generating step of generating data defining the three-dimensional computer model includes performing processing to generate at least one three-dimensional computer model of the subject object and object support and performing processing to remove the three-dimensional computer model of the object support.

81. (Currently Amended) An apparatus according to claim 50, wherein:

said computer model generator is operable to perform processing to generate at least one three-dimensional computer model of the subject object and object support, and

said computer model generator includes a computer model remover operable to perform processing to remove the three-dimensional computer model of the object support.

82. (Currently Amended) An apparatus for processing image data to generate a three-dimensional computer model, said apparatus comprising:

means for receiving image data defining at least in part a plurality of images of a subject object supported by an object support recorded at different relative positions and orientations;

means for receiving data defining the positions and orientations at which the images were recorded; and

means for processing the received data to generate data defining a three-dimensional computer model of the subject object but not the object support,

wherein said processing means is operable to perform processing to generate at least one three-dimensional computer model of the subject object and object support and wherein said processing means includes means for ~~a computer model remover operable to perform~~ performing processing to remove the three-dimensional computer model of the object support, by defining a volume of voxels in a three-dimensional space in dependence upon the known height of the object support such that the object support, but not the subject object, is excluded from the volume, and removing voxels from the volume in dependence upon the image data.